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10/028,014	12/21/2001	Thomas Patrick Dawson	80398P486	2412

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2676	5

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/028,014	DAWSON, THOMAS PATRICK	
	Examiner	Art Unit	
	Antonio A Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-5, 8-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (U.S. Patent 5,670,984) in view of Piazza et al. (U.S. Patent 6,191,793 B1).

In reference to claims 1, 8 and 13, Robertson et al. discloses a method for displaying an image on a display device and produces a magnification in the rendered image (see lines 1-3 of abstract and column 4, lines 29-36). Robertson et al. also discloses selecting a portion of an image to increase magnification over (see column 4, lines 29-36). Note, Robertson et al. discloses the images magnified to not be limited to a text document, a map, or a graph (see column 1, lines 29-30) which the office interprets as an image comprising of polygon graphics data. Further, certain types of maps and graphs could comprise of polygonal graphic data which, when used in maps, could describe surface attributes. Robertson et al. discloses the magnification of an image portion dependent upon a viewpoint, full image coordinates and boundaries of an image magnification lens (see column 6, lines 35-38). Robertson et al. also discloses these parameters to be adjusted to move the image lens in and out (zooming effect) (see column 6, lines 41-44). Robertson et al. discloses retaining viewpoint information (eye_x and eye_y) with reference to the position of the lens which, embodies a certain portion of a polygonal

image, by modifying the viewpoint data as the position of the image lens changes (see column 9, lines 8-23). Note, the office interprets the eye point angle of applicant's claim to be substantially similar to the angle formed by the coordinates of the viewpoint vs. the dimensions of the image lens of Robertson et al. as the size of the image lens would alter the viewing angle of the magnified image portion. Further, as the image lens of Robertson et al. changes in size and position, the viewpoint is also effected (see column 9, lines 11-19) causing new polygons to be displayed or current polygons to be occluded. Referring to Figures 1(c) and 8, Robertson discloses the magnification lens angle formed with respect to the surface normal as movement in the magnification lens correlates to the magnification of whatever is underneath the lens. In particular, Figure 1(c) shows an angle made from viewpoint (16) to the surface (18) with respect to the normal of the surface as a viewpoint vector could be drawn perpendicular to the surface. This theory is applied to Figure 8, as Robertson shows the image lens displaying a multi-page document magnifying whatever page the lens is above. Although Robertson et al. does disclose the image magnification method using objects mapped onto a 2D surface such as pixels of various colors (see column 5, lines 44-50) Robertson et al. does not explicitly disclose image magnification using texels. Piazza et al. discloses a method and apparatus for minimizing visible effects of texture LOD transitions across a polygon (see lines 1-2 of abstract). Piazza et al. also discloses the well known architecture of a "zoom pyramid" which stores a sequence of texture maps, made up of texels, of the same texture pattern to be used at different relative distances from the object to the viewer (see column 1, lines 30-32, 34-36 and column 4, lines 44-46). Note, neither Robertson et al. nor Piazza et al. explicitly disclose each texel having U and V coordinates however, it is well known in the computer graphics art that texture maps contain

units of texture, named texels. Further, these texels are stored in a map and can be addressed by some sort of coordinate system usually defined by the variables U and V (Official Notice). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image magnification method of Robertson et al. with the texturing techniques of Piazza et al. in order to add greater realism to graphic images especially when utilizing the magnification methods of Robertson et al. (see column 1, lines 10-14 of Piazza et al.). Note in reference to claim 8, claim 8 is substantially similar to claim 1 and therefore is rejected under similar rationale. Further, Robertson et al. discloses a processor system including program storage for storing CPU instructions which implement functions of a display system (see column 5, lines 31-39). Note, in reference to claim 13, the office interprets the processor system of Robertson et al. substantially similar to the rendering pipeline of applicant's claims.

In reference to claims 2, 9 and 14, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claims 1, 8 and 13 respectively above, in addition, Robertson et al. discloses multiplying the viewpoint data, interpreted as the eye point angle data of applicant's claims above, by the changes in x and y positions of the image lens (see column 9, lines 20-23). Piazza et al. discloses providing an offset range to computed pixel LOD values (see column 5, lines 59-60) which the office interprets as substantially similar to a texel.

In reference to claims 3 and 4, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claim 1 above. Although Piazza et al. discloses offsetting a texel by a dithering offset range (see column 5, lines 59-60), neither Robertson et al. nor Piazza et al. explicitly disclose offsetting the texel by an eye point angle and a value of N. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement

the offsetting of texel coordinates by an eye point angle in order to compensate for the change in viewpoint positioning so that texture mapping will remain constant in reference to currently displayed textured polygon data points. Further, in order for textured data to be mapped to their appropriate polygons, it is well known in the art that a modification in position of polygon data must somehow be communicated to perform the same modification in position of texture data (Official Notice). Also, the term, "map" in the graphics art is well known to signify the process of storing values that correlate to another set of values, thus in order to maintain an original mapping of values, changes to one set of values would require changes to the other set of values.

In reference to claims 5 and 10, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claims 3 and 9 respectively above. Although Robertson et al. discloses performing the magnification transformation on only the vertices of an image lens and an identity matrix (see column 8, lines 22-28), neither Robertson et al. nor Piazza et al. explicitly disclose interpolating eye point angle data for each texel to be produced between texels including the vertices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the interpolating of eye point angle data for "in between" texels of vertices in order to efficiently calculate texture offset values for "in between" polygon data. Further, it is well known in the art that certain types of interpolation can provide for more efficient methods of calculating intermediate data values when beginning and ending data values have been previously calculated (Official Notice).

In reference to claim 12, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claim 10 above. Although Piazza et al. discloses offsetting a texel by a dithering offset range (see column 5, lines 59-60), neither Robertson et al. nor Piazza et al.

explicitly disclose offsetting the texel with the modified x and y components of an eye point angle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the offsetting of texel coordinates with the modified x and y components of an eye point angle in order to compensate for the change in viewpoint positioning so that texture mapping will remain constant in reference to currently displayed textured polygon data points. Further, in order for textured data to be mapped to their appropriate polygons, it is well known in the art that a modification in position of polygon data must somehow be communicated to perform the same modification in position of texture data (Official Notice). Also, the term, "map" in the graphics art is well known to signify the process of storing values that correlate to another set of values, thus in order to maintain an original mapping of values, changes to one set of values would require changes to the other set of values.

In reference to claim 15, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claim 13 above in addition, Robertson et al. discloses performing the magnification transformation on only the vertices of an image lens and an identity matrix (see column 8, lines 22-28).

2. Claims 6, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (U.S. Patent 5,670,984), Piazza et al. (U.S. Patent 6,191,793 B1) and further in view of Rossignac (U.S. Patent 5,872,572).

In reference to claims 6 and 11, Robertson et al. and Piazza et al. disclose all of the claim limitations as applied to claims 5 and 10 above, however, neither Robertson et al. nor Piazza et al. explicitly disclose resolving the eye point angle into an angle in an X-Z plane and an angle in a Y-Z plane. Rossignac discloses a method and apparatus for generating a 3-D scene from non-

uniform resolution image data represented by rendering primitives (see lines 1-8 of abstrac). Rossignac discloses the viewing fustrum of the camera (eye) view bounded by 4 planes that intersect at a viewpoint and create two angles, one in the X-Z plane (angle α) and the other in the Y-Z plane (angle β) (see column 5, lines 23-39 and Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the creation of two angles in the X-Z and Y-Z planes, together making up the camera (eye) point angle with the image magnification method of Robertson et al. and the texturing techniques of Piazza et al. in order to incorporate a cost effective technique for rendering images by improving field of view resolution techniques in an interactive graphical environment (see column 1, lines 38-45 of Rossignac).

In reference to claim 7, Robertson et al., Piazza et al. and Rossignac disclose all of the claim limitations as applied to claim 6 above. Although Piazza et al. discloses a method and apparatus for computing an LOD value for a pixel for applying texture to the surface of a polygon (see column 4, lines 32-34), neither Robertson et al., Piazza et al. nor Rossignac explicitly disclose selecting texels based on a modified U and V mapping derived through using the eye point angles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select texels based on a modified U and V mapping derived through using the eye point angles in order to compensate for the change in viewpoint positioning so that texture mapping will remain constant in reference to currently displayed textured polygon data points. Further, in order for textured data to be mapped to their appropriate polygons, it is well known in the art that a modification in position of polygon data must somehow be communicated to perform the same modification in position of texture data (Official Notice). Also, the term,

"map" in the graphics art is well known to signify the process of storing values that correlate to another set of values, thus in order to maintain an original mapping of values, changes to one set of values would require changes to the other set of values.

Response to Arguments

3. Applicant's arguments, see page 9, filed 12/24/2003, with respect to the specification, have been fully considered and are persuasive. Some minor informalities have been corrected within the specification and therefore, the objection to the specification has been withdrawn.

4. Applicant's arguments, see page 9, filed 12/24/2003, with respect to the drawings, have been fully considered and are persuasive. Some minor informalities have been corrected within the specification and reference numbers included in the drawings therefore, the objection to the drawings has been withdrawn.

5. Applicant's arguments, see page 9, filed 12/24/2003, with respect to the claim objections of claims 1 and 13, have been fully considered and are persuasive. Minor informalities have been corrected within these claims and therefore, the objection to claims 1 and 13 has been withdrawn.

6. Applicant's arguments, see page 9, filed 12/24/2003, with respect to the rejection(s)of claim(s) 1-7 and 8-12 under 35 U.S.C. §112, 2nd paragraph, have been fully considered and are persuasive, particularly in view of the amendments made to the claims. Therefore, the rejection has been withdrawn.

7. Applicant's arguments filed 12/24/2003 have been fully considered but they are not persuasive.

Applicant argues, in reference to claims 1, 8 and 13, that neither Robertson nor Piazza disclose retaining eye point δ angle data, perturbing each eye point δ angle, and incorporating perturbed text angles. Applicant states that the eye point angle of the present invention is the angle formed from the viewpoint and the local surface normal however, amended claims 1, 8 and 13 now recite, "...the eye point δ angle being formed with respect to a normal of the polygon surface." Referring to Figures 1(c) and 8, Robertson discloses the magnification lens angle formed with respect to the surface normal as movement in the magnification lens correlates to the magnification of whatever is underneath the lens. In particular, Figure 1(c) shows an angle made from viewpoint (16) to the surface (18) with respect to the normal of the surface as a viewpoint vector could be drawn perpendicular to the surface. This theory is applied to Figure 8, as Robertson shows the image lens displaying a multi-page document magnifying whatever page the lens is above. Robertson et al. also discloses retaining viewpoint information (eye_x and eye_y) with reference to the position of the lens which, embodies a certain portion of a polygonal image, by modifying the viewpoint data as the position of the image lens changes (see column 9, lines 8-23). Note, the office interprets the eye point angle of applicant's claim to be substantially similar to the angle formed by the coordinates of the viewpoint vs. the dimensions of the image lens of Robertson et al. as the size of the image lens would alter the viewing angle of the magnified image portion. Piazza et al. discloses the well known architecture of a "zoom pyramid" which stores a sequence of texture maps, made up of texels, of the same texture pattern to be used at different relative distances from the object to the viewer (see column 1, lines 30-32, 34-36 and column 4, lines 44-46). Therefore, the office believes Robertson and Piazza to overcome the limitations of claims 1, 8 and 13.

Further, in reference to claims 6 and 11, applicant argues that the viewing planes of Rossignac are not resolved into the X-Z or Y-Z planes however, the office disagrees. With reference to Figure 3 of Rossignac, the two viewing angles formed, α and β, are oriented with respected to the four sides of the dashed rectangle in Figure 3. Angle α is oriented by the top and bottom (representing the width of the rectangle) of the rectangle which the office interprets as forming the X-Z plane and angle β is oriented by the left and right sides (representing the height of the rectangle) of the rectangle which the office interprets as forming the Y-Z plane. Though these planes may be formed with respect to one another they must be represented in some sort of dimensions which the office interprets as the X,Y and Z planes as described above. Therefore, the office believes Rossignac to overcome the limitations of claims 6 and 11.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Robertson is directed towards image magnification using an image lens. Piazza is directed towards adjusting the level of detail in texture across polygons while Rossignac is directed towards rendering views of a display at different resolutions depending upon the location of where the view is displayed on the display screen (see column 3, lines 6-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image magnification method of Robertson et al. with the texturing

techniques of Piazza et al. in order to add greater realism to graphic images especially when utilizing the magnification methods of Robertson et al. (see column 1, lines 10-14 of Piazza et al.). It would have further been obvious to one of ordinary skill in the art at the time the invention was made to implement the creation of two angles in the X-Z and Y-Z planes, together making up the camera (eye) point angle with the image magnification method of Robertson et al. and the texturing techniques of Piazza et al. in order to incorporate a cost effective technique for rendering images by improving field of view resolution techniques in an interactive graphical environment (see column 1, lines 38-45 of Rossignac). Further, the office believes that the above references are directly applicable to one another as they deal with image magnification, texturing and image resolution, further which, as one of well known skill in the computer graphics art would know, are closely connected.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

1/26/04

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600